USEPA

REGION 4

Nonpoint Source Program Success Story

Florida

City of Sebastian Stormwater Park - St. Johns River Water Management District

Waterbody Improved Sebastian River watershed is a tributary of the Indian River Lagoon (IRL). The IRL and its tributaries, an estuary of national significance, are included in the National Estuary Program. It is also a state priority waterbody designated under the Surface Water Improvement and Management (SWIM) Program. The IRL in this area is an Outstanding Florida Water and an Aquatic Preserve. This project decreased freshwater inflow into the Sebastian River and helped restore optimal salinity levels in the estuary.

OVERVIEW

Nonpoint source stormwater discharges from the entire watershed have been implicated as the cause of undesirable fluctuations in salinity and increased loading of total suspended matter, nutrients, bacteria and other pollutants to the Sebastian River. Though there has been only minor commercial or industrial development within this watershed, there is significant agricultural development of lands to the west which discharge stormwater to the Sebastian River through large, man-made drainage systems. Significant urbanization within the watershed is primarily located within the City of Sebastian and the rapid growth in the City is forecast to continue for the foreseeable future. Located along a nine mile stretch of the lower western and southern banks of the South Prong, the City of Sebastian occupies approximately 9000 acres of the Sebastian River watershed. With the exception of lands eastward of the Atlantic Coastal ridge, the majority of the runoff from the City drains to the South Fork of the Sebastian River.

The City's existing storm drainage system is inadequate for either flood control or addressing the impacts of stormwater on the Sebastian River and the Indian River Lagoon. The majority of the stormwater runoff from this basin is delivered by a system of more than 700 miles of canals, ditches and swales to the Sebastian River and ultimately the Indian River Lagoon. This system, installed during the initial phases of development in the late 1950s, does not provide the stormwater storage or treatment required of present-day development.

Similar to much of the Indian River Lagoon's waters, the Lagoon waters adjacent to the Sebastian River are designated as Class II - Shellfish harvesting waters. Historically, this area was among the most productive shellfish waters on Florida's east coast.

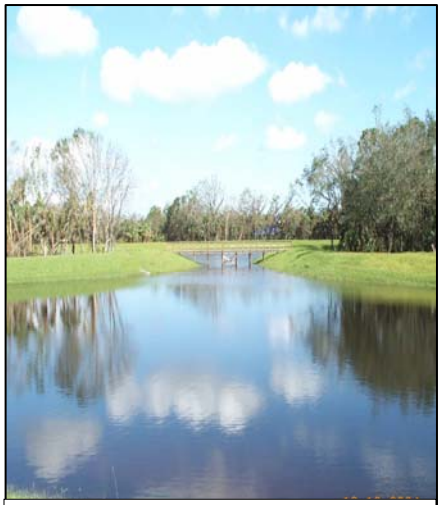

Figure 1 - Walking trail bridge crossing wet pond #1.

Throughout the Indian River Lagoon region stormwater runoff has been linked to increases in fecal coliform bacteria levels. In accordance with state and federal guidelines to protect public heath, shellfish harvesting is suspended following storm events. Shellfish harvesting cannot resume until bacteriological levels fall to acceptable levels. Due to elevated levels of coliform bacteria, shellfish harvesting is prohibited at the confluence of the Sebastian River and the Indian River Lagoon at all times.

It has also been suggested that nonpoint source pollution is responsible for reduction of habitat within the Indian River Lagoon. There have been shifts in seagrass communities in many areas of the Indian River Lagoon, with an overall reduction in total grass bed acreage and decreases in the maximum depth of these beds. The grass beds immediately south of the Sebastian River have consistently become more fragmented over time.

HIGHLIGHTS

The 166-acre Sebastian Storm Water Park, a community multi-use amenity, is located within the City of Sebastian along the Collier Canal/ Elkcam waterway, which is a major canal system serving the City of Sebastian. The drainage area serviced by this storm water retrofit project includes over 1,400 acres of medium density residential development that drains via the canal system into the South Prong of the Sebastian River. The storm water park has been constructed to utilize a series (treatment train) of interconnected storm water best management practices to maximize pollutant removal and reduce the volume of freshwater discharges to the estuary. These project components consist of two wet-detention ponds, one dry or wetland detention area, and a large wetland impoundment storage/treatment area. Because the property is much higher in elevation than the adjacent canal water level, water from the canal is pumped up into the storm water park. The storm water park stores approximately one-inch of runoff from the drainage basin; provides greater than 21 days of residence time facilitating recharge to the aquifer; and is designed to detain runoff equal to the mean annual storm event.

Figure 2 - Trail system from the parking lot to grassed berm around pond #1

Park design provides multiple benefits for the community. A main benefit is the reduction of pollutants discharged to the Sebastian River and the Indian River Lagoon. In addition to the pollutant removal efficiencies of the project, the storm water park was designed to preserve existing natural oak hammock areas for passive recreation uses including hiking trails and family picnic areas throughout the park. Educational signs at the entrance to the park and along the hiking trails are designed to educate the park's visitors on stormwater runoff issues and the importance of preserving wetlands. Numerous waterfowl and migratory birds utilize the ponds and wetlands for habitat and foraging, and existing on-site populations of scrub jays and gopher tortoise can be found at the park as well.

Figure 3 - Aerial photograph of stormwater facility

RESULTS

The Sebastian storm water park decreases freshwater inflows to the Sebastian River and the Indian River Lagoon and minimizes the negative impacts on salinity from too much freshwater. This aided in the restoration of optimal salinity for the propagation of clams and oysters. The park also decreases the introduction of suspended materials and excessive nutrients into the estuary.

The storm water park is estimated to remove pollutant loadings from the drainage basin equaling: Total Nitrogen - 80%; Total Phosphorous - 56%; and Total Suspended Solids - 79%. The table below summarizes estimated annual pollutant load reductions (in pounds).

Estimated Annual Pollutant Load Reduction

POLLUTANT	POUNDS
Total Suspended Solids (TSS)	173,180
Total Nitrogen (TN)	3,749
Total Phosphorous (TP)	1,034

PARTNERS AND FUNDING

The project was funded by $575,000 in Section 319 funding from the USEPA. Additional funding was provided by the St. Johns River Water Management District and the City of Sebastian for a total project cost of $2,516,651. The City will maintain the park facility.

For additional information contact:

John Abendroth
Florida Department of Environmental Protection
Nonpoint Source Management Section
Phone: 850-245-8682

E-mail: John.Abendroth@dep.state.fl.us